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doi:10.15171/jept.2016.12

Original Article

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Journal of Emergency Practice and Trauma

Volume 3, Issue 2, 2017, p. 46-48

Types of trauma in different seasons in patients referred to Imam Reza Hospital Trauma Center

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Trauma is a disease of modern societies and one of the reasons for the deaths of all ages in those societies. It is estimated that each year about 8.5 million people worldwide lose their lives as a result of trauma. Trauma can be divided into four main classes of mechanism of injury: blunt trauma, penetrating trauma, trauma from explosions and trauma from temperature (1). Similar damage caused by trauma can be different in adults and children. Fifty percent of deaths among people aged 1 to 14 are due to trauma as a result of traffic accidents (2). The most affected part or organ damage in these children is related to head trauma (2,3). As a global problem, common injuries are on the rise. About 16000 people die daily around the world due to various types of injuries and injuries as the third leading cause of death are common amongst people aged 1 to 40 years (4). According to the study of tuberculosis and AIDS, in the African continent trauma is the third cause of death (5,6). Among different types of injuries around the world, road accidents are the most common (7). Based on evidence released by the World Health

Organization (WHO), about 25% of deaths from injuries are related to road accidents (4). In addition, data shows that injuries are the leading cause of death and morbidity in children and youth in the United States (8). In this country, unintentional fall injuries are the second cause of death in the category of injuries (9). Although road accidents are the most important cause of trauma, but in older people fall is more common; on the other hand pedestrian accidents are less common (2,10). Generally, older people are more vulnerable to injuries than young people in everyday tasks (2,11). One-third of older people fall each year and a quarter of them incur serious injuries. They usually fall because of drugs, vision and cognitive impairment, stroke and arthritis. Overall, the fifth leading cause of death among people aged over 65 years is trauma. Chance of trauma deaths in people over the age of 80 is four times higher than young people (2). Taking into account the problems caused by trauma in developing countries as well as the high number of accidents in Iran, this study aimed to compare types of trauma in different seasons in patients referred to Imam Reza hospital trauma



center in Tabriz.

Methods

In this cross-sectional study, all trauma patients admitted to Trauma Emergency Department of Imam Reza hospital in Tabriz entered the study (from March 2013 to the end of March 2014). Inclusion criteria encompassed all patients referred to Emergency Department of Imam Reza hospital with trauma. Exclusion criteria included incomplete documentation and records of trauma patients without vital signs admitted to the emergency department. As this study did not focus on the diagnosis and treatment of diseases, we used epidemiological data from history and physical examination as a source. Descriptive statistics such as frequency, percentage, mean and standard deviation were used for data analysis. Also, analytical tests such as Pearson correlation were used where appropriate. All data were analyzed using SPSS software version 15.0. *P* values less than 0.05 were considered significant.

Results

All of the patients with chief complaint of trauma who came to the emergency department during 20th of March, 2013 up to 20th of March 2014 were included in the study. Patients who expired out of the hospital were excluded. Of all 23876 patients, 18044 patients (75.6%) were male and 5832 (24.4%) were female. The mean age was 29.95; the majorities (31.7%) were 20 to 30 years old while the age ranges 50 to 60 and over 60 years had the lowest prevalence (each 5%).

Figure 1 shows that the majority of trauma cases had a prevalence of 11.2% (2671) and occurred in September 2013. Conversely, March had the least amount of trauma (5.3%). In general, the frequency of trauma from the most to the least was as below:

Second quarter (30%), first quarter (29.9%), third quarter (24.2%) and fourth quarter (15.8%).

Table 1 depicts the prevalence of different types of trauma in the emergency room of Imam Reza hospital. Traffic

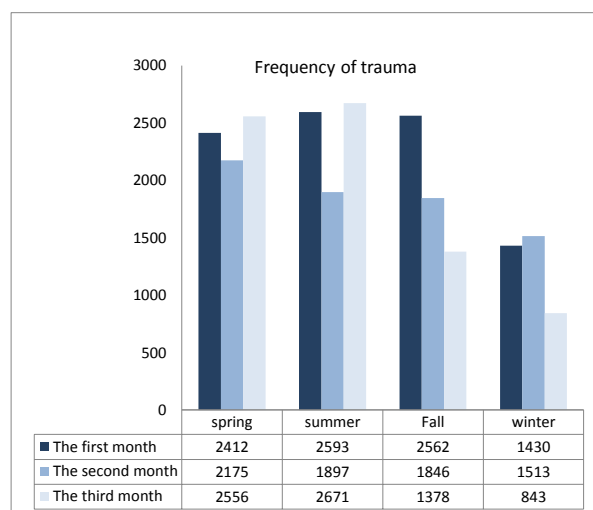


Figure 1. Frequency of trauma patients by month and season of the year.

accidents were the most common cause of trauma in patients with a prevalence of 33.9% (8095). After accidents, stumbling had a prevalence of 27.2% (6505). Additionally, falls had a prevalence of 10.5% (2510). It is important to mention that conflict, head trauma, motorcycle trauma, gunshot wound, laceration, chest trauma, pedestrian injury, abdominal trauma, CO poisoning, electrocution and stab wounds had the lowest prevalence (less than 10%).

As can be seen from Figure 2, the most affected organ was head with a prevalence of 38.6%. Upper extremity injuries had a prevalence of 16.8% and lower extremities and chest had a prevalence of 11.9%. However, an injury to the neck had the lowest prevalence (5.9%).

Figure 3 shows that 23876 trauma patients were admitted to the emergency department of Imam Reza hospital. Among them, 19532 patients were discharged and a total of 6094 patients left the hospital.

Results showed that there is not any relation between age, gender, type of injuries and the affected limb.

Discussion

In Iran, like other countries, injuries caused by trauma are the leading cause of death in populations (12). In this study, men had more injuries (51.2%) than women. This finding is in line with the results of other studies (12-14). In our study, the majority of patients were in the age range of 20 to 30 years. This is consistent with the findings of Ogendi

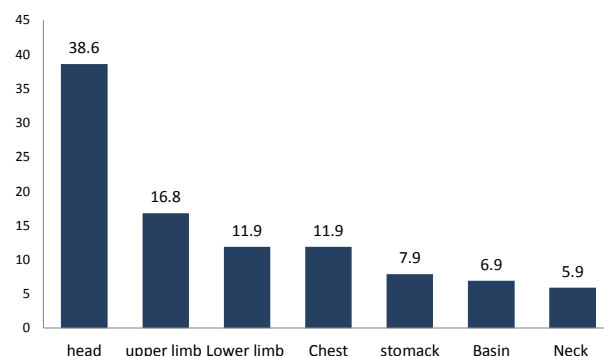


Figure 2. Frequency graph of organs injuries.

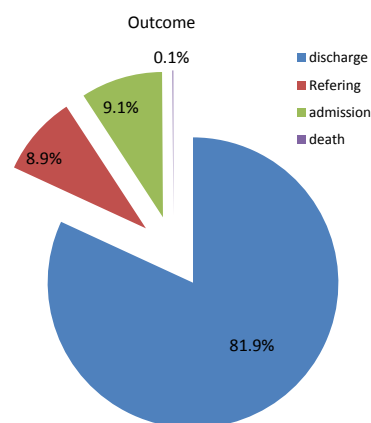


Figure 3. The consequence of trauma patients admitted to the emergency department.

Table 1. Prevalence of type of trauma

Type of trauma	No. of patients	Percent
Driving accidents	8095	33.9
Stumble	6505	27.2
Fall from height	2510	10.5
Conflict	2302	9.6
Head trauma	1654	6.9
Motorcyclists accident	767	3.2
Injury caused by bullet	520	2.2
Laceration	489	2
Chest trauma	286	1.2
Pedestrian injury	224	0.9
Abdominal trauma	222	0.9
CO poisoning	212	0.9
Electrocution	53	0.2
Injury caused by knife	37	0.2

and Ayisi study (13). Similarly, Patil et al also found that the majority of patients were in the age range of 20 to 29 years (14). The findings showed that in 2013, most cases of the trauma occurred in September and the safest month was March. The high prevalence of trauma in the second quarter of the year compared to other seasons could be due to summer holidays. Most cases of trauma were related to road accidents. Studies show that trauma is mainly caused by traffic accidents (12,13) and this is in line with our finding. Villaveces et al also concluded that trauma is the main reason for the fall (15). Head and upper extremities were the most frequent organs which were damaged. Fischler and Röthlisberger in their study observed that most snowboarding athletes were injured in the arm (16). However, in the study from Turkey, the most prevalent organs which were damaged were foot and ankle. In this study, lower limb fracture and dislocation of the shoulder was in the second step (17). Patil et al also concluded that fractures, lower limb fracture, upper limbs and head were most prevalent in 190 cases of road accidents (14). In our study, 81.8% of patients were discharged, 9.1% were hospitalized, 8.9% were referred and 0.1% had mortality. Roudsari et al showed that 94.9% of trauma patients were discharged and 5.1% died (12).

Conclusion

Based on the findings of our study, the prevalence of trauma is higher among males and younger people. In addition, we found that traffic accidents were the leading cause of trauma. Traumas occurred more in September. We can conclude that with proper planning and stringent traffic rules the trauma rate can be reduced. By the same token, these precautions can improve health and have an impact on social and economic matters.

Ethical issues

This manuscript was approved by ethic committee of Tabriz University of Medical Sciences (grant No. 5/4/9602).

Authors' contributions

SSV, study design and critical revision; KS, supervision;

SD, data gathering; PH, data analysis; BY, draft writing.

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